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[FAD 19: Dairy Products and Equipment]

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Indian Standard
SPECIFICATION FOR ALUMINIUM ALLOY MILK CANS
(Second Revision)

Second Reprint SEPTEMBER 2007
(Including Amendment Nos. 1 and 2)

UDC 637.135:621.798.144[669.71]

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
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Gr 4 *June* 1984

AMENDMENT NO. 3 JUNE 2012
TO
IS 1825 : 1983 SPECIFICATION FOR ALUMINIUM ALLOY MILK CANS

(Second Revision)

(*Page* 10, *clause* **5.3**, *lines* 3 and 4) — Substitute the sentence 'The Brinell hardness of the cans shall not be less than 85 *HBW* when tested according to the method prescribed in IS : 1500 - 2005*.' *for* 'The Brinell hardness of the cans shall not be less than 85 *HB* when tested according to the method prescribed in IS : 1790 - 1961*.'

(*Page* 10, *footnote*) — Substitute '*Method for Brinell hardness test for metallic materials' *for* '*Method for Brinell hardness test for light metals and their alloys'

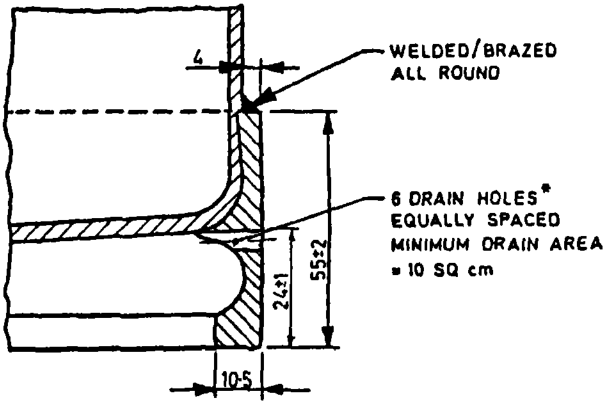
(FAD 19)

Reprography Unit, BIS, New Delhi, India

AMENDMENT NO. 2 DECEMBER 1999
TO
IS 1825 : 1983 SPECIFICATION FOR ALUMINIUM ALLOY MILK CANS

(Second Revision)

(*Page* 6, *Fig.* 2) — Substitute the following for the existing figure:



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Printed at Simco Printing Press, Delhi

AMENDMENT NO. 1 OCTOBER 1997
TO
IS 1825 : 1983 SPECIFICATION FOR ALUMINIUM ALLOY MILK CANS

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(*Page* 10, *clause* **5.9**, *line* 2) — Substitute '3.9' *for* '4.75'.

(*Page* 10, *clause* **5.9**) — Insert the following note at the end:

NOTE — For guidance, aluminium alloy with a specific gravity of 2.728 approximately may be used for fabrication.

(FAD 57)

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SPECIFICATION FOR ALUMINIUM ALLOY MILK CANS

(Second Revision)

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SPECIFICATION FOR ALUMINIUM ALLOY MILK CANS

(*Second Revision*)

0. FOREWORD

0.1 This Indian Standard (Second Revision) was adopted by the Indian Standards Institution on 23 December 1983, after the draft finalized by the Dairy Equipment Sectional Committee had been approved by the Agricultural and Food Products Division Council.

0.2 An ideal milk can has to be designed in such a way that it should transport its contents safely without spillage and with minimum of churning. It should also withstand rough handling, occupy minimum space on trucks or lorries, allow a high degree of sterilization and should also facilitate cleaning. Further, it has to be light and durable. This standard has been drawn up giving due consideration to all these points.

0.3 This standard was first published in 1961. The standard was subsequently revised in 1971 to include the modified dimensions of 20-, 30-, 40- and 50-litre cans for better sanitary design, additional requirements for hardness of cans, sampling scheme, specification for one-piece construction or two-piece construction of the body, in transport-type cans. In this revision a number of modifications have been incorporated. The important ones amongst them are given below:

a) The title of this standard has been changed to 'Specification for aluminium alloy milk cans',

b) Requirements for 10-litre can have been deleted as cans of this capacity are not being used now,

c) Figure for delivery-type milk cans has been modified, and

d) Additional quality requirement for cans in respect of mass has been incorporated.

0.4 In India, at present, milk cans in use are made of tinned mild steel, aluminium alloy and stainless steel. The 'Indian Standard Specification for milk cans made of tinned mild steel' (IS : 1373-1981) has already been published, but the standard covering stainless steel milk cans has been deferred, due to shortage of stainless steel.

0.5 The aluminium alloy milk cans conforming to this standard are solution heat-treated and age-hardened for maximum strength and they may also be subsequently anodized, if required by the purchaser.

0.6 This standard contains clauses 5.3, 5.4, 5.7 and 8.1(e) which call for an agreement between the purchaser and the supplier.

0.7 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard prescribes the requirement for aluminium alloy milk cans used for collection and distribution of fluid milk. This standard covers cans of:

a) rated capacity of 20 litres for delivery cans; and

b) rated capacity of 20, 30, 40 and 50 litres for transport cans.

2. CAPACITY

2.1 The rated capacity of the can shall be taken as the quantity of water measured in litres which fills the can to the junction of the shoulder and the neck. This quantity shall be within a tolerance of ± 2 percent of the rated capacity.

3. MATERIAL

3.1 Can Body and Can Lid — The can body and can lid shall be made from sheets of aluminium alloy conforming to IS designation 64430 (HS-30) of IS : 737-1974†, with copper content as near as possible to 0·05 percent.

3.2 Handles and Ears for Handles — These shall be made from extruded section of aluminium alloy conforming to IS designation 64430 (HE-30) of IS : 733-1975‡. Ear for handles may also be made from sheets and strips of aluminium alloy conforming to IS designation 64430 (HS-30) of IS : 737-1974†.

3.3 Bottom Band — This shall be made from extruded section of aluminium alloy conforming to IS designation 64430 (HE-30) of IS : 733-1975‡.

4. SHAPE AND DIMENSIONS

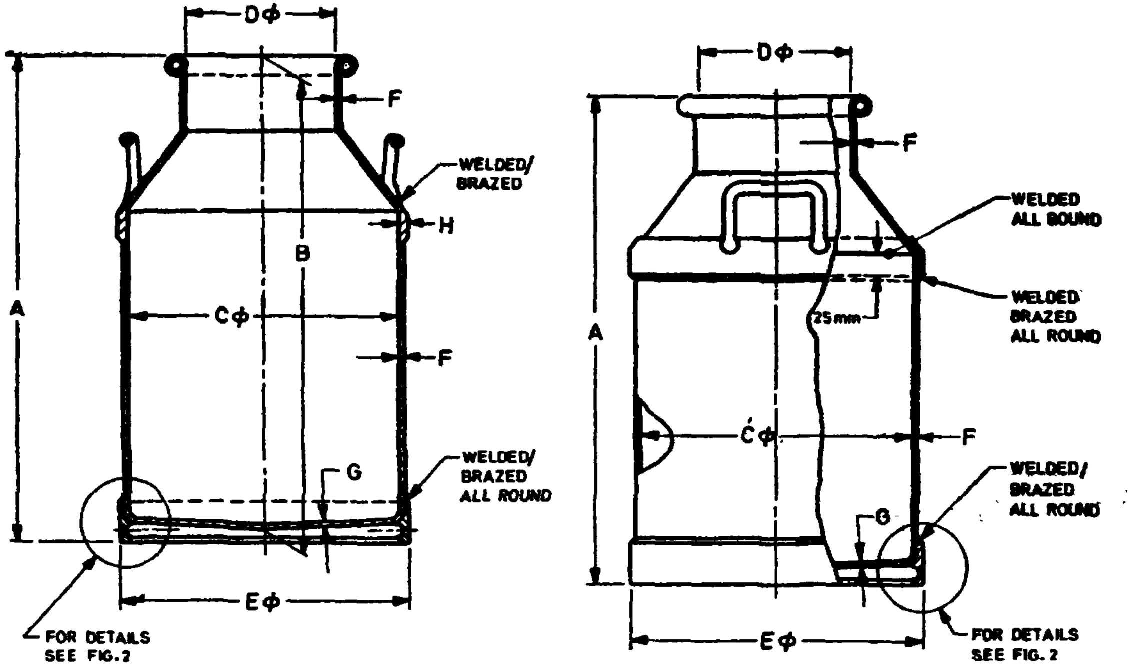
4.1 The can shall be manufactured in accordance with the shape and dimensions shown in Fig. 1 to 6.

---

*Rules for rounding off numerical values (*revised*).

†Specification for wrought aluminium and aluminium alloys, sheet and strip (for general engineering purposes) (*second revision*).

‡Specification for wrought aluminium and aluminium alloy bars, rods and sections (for general engineering purposes) (*second revision*).



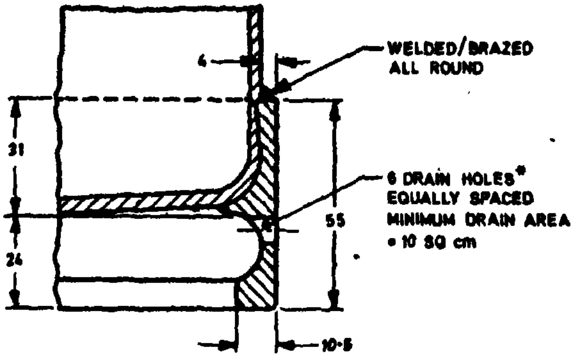
1A One-Piece (Monobloc)

1B Alternate Design

All dimensions in millimetres.

Capacity (in Litres)	*A*	*B*	*C*ϕ	*D*ϕ	*E*ϕ	*F Min*	*G Min*	*H Min*
20	447 ± 4	431 ± 3	280 ± 3	200 ± 0·5	292 ± 3	1·6	2·0	2·5
30	512 ± 4	496 ± 3	320 ± 3	200 ± 0·5	332 ± 3	2·0	3·0	2·5
40	591 ± 4	575 ± 3	340 ± 3	200 ± 0·5	352 ± 3	2·0	3·0	2·5
50	651 ± 4	634 ± 3	360 ± 3	200 ± 0·5	372 ± 3	2·0	3·0	2·5

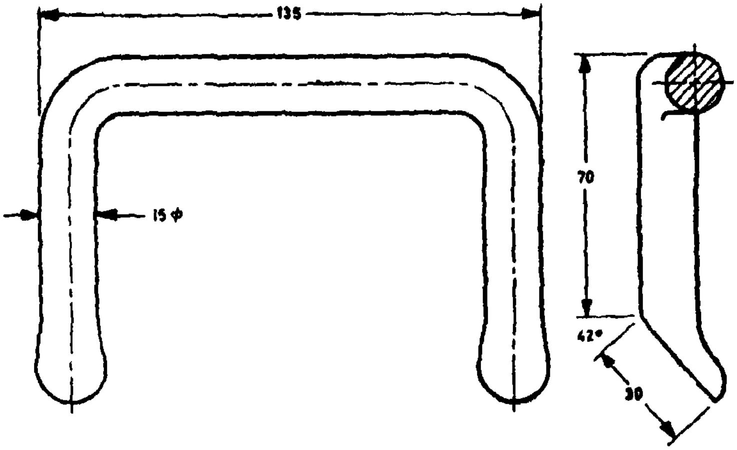
Fig 1. Typical Aluminium Alloy Milk Cans—Transport Type (20, 30, 40 and 50 Litres)



All dimensions in millimetres.

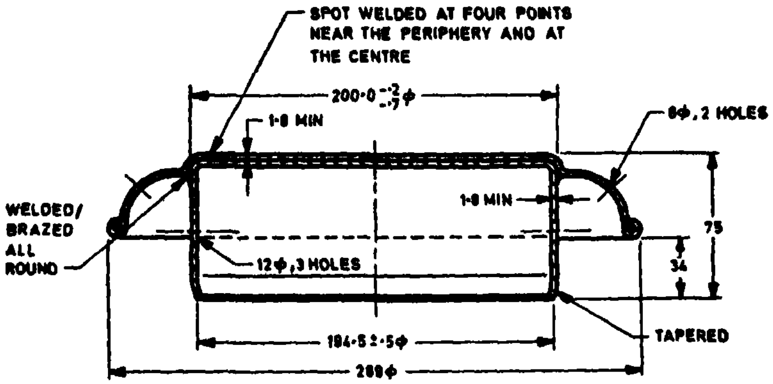
*The drain holes may be oval, circular, diamond or 'D' shaped.

FIG. 2 BOTTOM BAND FOR ALUMINIUM ALLOY MILK CANS

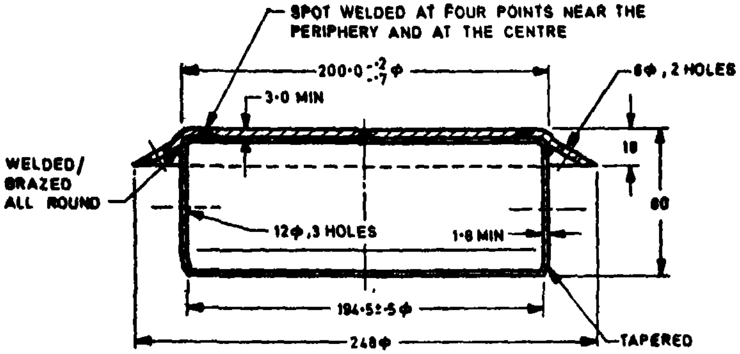


All dimensions in millimetres.

FIG. 3 HANDLE FOR ALUMINIUM ALLOY MILK CANS

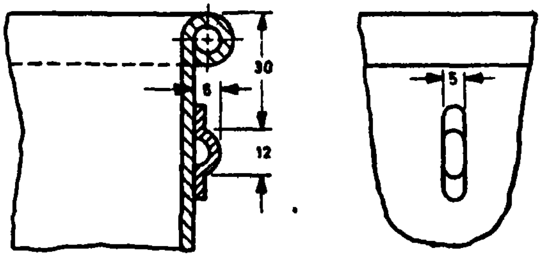


4A For 30-, 40-and 50-Litre Cans



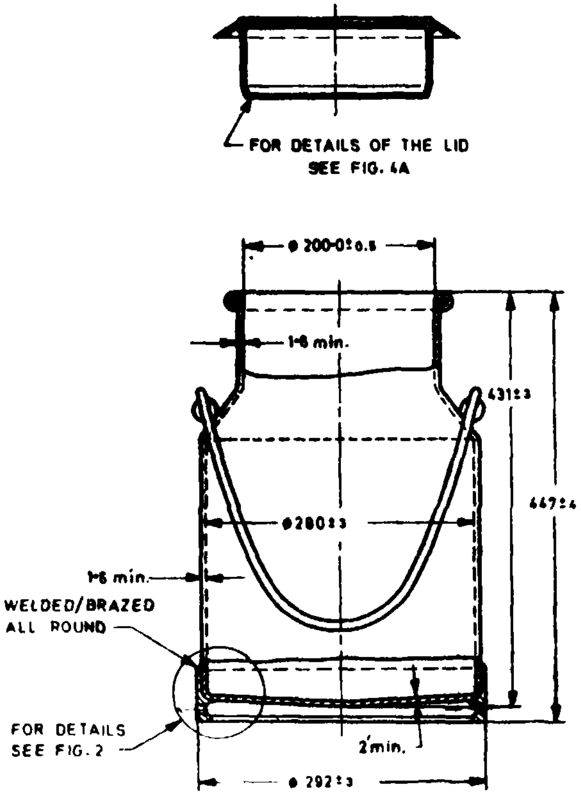
4B For 20-Litre Cans
Transport or Delivery Type
All dimensions in millimetres.

FIG. 4 LIDS FOR ALUMINIUM ALLOY MILK CANS



All dimensions in millimetres.

FIG. 5 SEALING LUG FOR ALUMINIUM ALLOY MILK CANS



All dimensions in millimetres.

FIG. 6 ALUMINIUM ALLOY MILK CAN—DELIVERY TYPE (20 LITRES)

4.1.1 Slight variations in the overall dimensions may be permitted provided that :

a) Neck dimensions are in accordance with Fig. 1 and 6,

b) Inner lid dimensions are in accordance with Fig. 4 to allow for interchangeability, and

c) Combined effect of permitted tolerances shall be such as not to allow a variation of more than 2 percent in the rated capacity.

5. MANUFACTURE

5.0 Parts — Delivery cans of 20 litre capacity shall consist of a body, bottom band, lid and ear with handles. Transport cans of 20, 30, 40 and 50 litre capacities shall consist of a body, bottom band, lid and handles.

5.1 The minimum thicknesses for different parts of the finished cans shall be as given in Table 1.

TABLE 1 MINIMUM THICKNESSES FOR DIFFERENT PARTS OF THE CANS

Part	Capacity (in Litres)			
	20	30	40	50
(1)	(2) mm	(3) mm	(4) mm	(5) mm
Body and neck	1·6	2·0	2·0	2·0
Bottom	2·0	3·0	3·0	3·0
Lid (inner)	1·8	1·8	1·8	1·8
Lid (outer)	3·0	1·8	1·8	1·8

5.2 Mode of Shaping

5.2.1 *One-Piece Can* — The one-piece (monobloc) can shall be manufactured by means of pressing, deep-drawing and, if necessary, subsequent spinning. Extra thickness at shoulder shall be provided during shaping to give additional strength (*see* Fig. 1A and 6).

5.2.1.1 If the thickness at the shoulder is less than 2·5 mm, a reinforcement ring of 2 mm thickness shall be provided.

5.2.2 *Two-Piece Can* — The two-piece can body shall be manufactured by pressing, deep-drawing and, if necessary, subsequent spinning and by joining neck and body by welding. A reinforcement ring shall be provided to give additional strength (*see* Fig. 1B).

5.3 The can shall be solution heat-treated and age-hardened for maximum strength and they may also be subsequently anodized, if required by the purchaser. The Brinell hardness of the cans shall not be less than 85 *HB* when tested according to the method prescribed in IS : 1790-1961*.

5.4 Lids — The lids shall be manufactured by means of pressing and spinning and shall be heat-treated after manufacture. The lid shall be anodized if required by the purchaser.

5.5 Bottom Bands — The bottom band shall be made from extruded aluminium alloy section, rolled and brazed (*see* IS : 2927-1975† and IS : 812-1957‡) or welded (*see* IS : 7273-1974§) to ring shape. The bottom band shall be shrunk fit with a proper locking arrangement on the body. This shall be followed by brazing or welding all around. The joint of the bottom band to the body should be proper so as not to make the cans insanitary (*see* Fig. 2). A typical locking arrangement is also shown in Fig. 2.

5.6 Handles — The handles for transport cans and ears for delivery cans shall be brazed or welded on the body. The handles for delivery can shall be hooked to ears.

5.7 Sealing Lug — If required by the purchaser, a sealing lug shall be made to shape (*see* Fig. 5) and soundly brazed (*see* IS : 2927-1975† and IS : 812-1957‡) or welded (*see* IS : 7273-1974§) on the neck.

5.8 Workmanship and Finish — All brazing or welding shall be sound, free of porosity, of adequate strength to withstand normal use and shall be finished smooth to provide a sanitary finish to all the inner surfaces.

5.9 The mass of the 20-, 30-, 40-, and 50-litre can including the lid shall be minimum 4·75, 5·9, 6·5 and 8·0 kg respectively.

6. SAMPLING AND CRITERIA FOR CONFORMITY

6.1 The method of drawing representative samples of the cans and the criteria for conformity shall be as prescribed in Appendix A.

7. TESTS

7.1 The cans when immersed in water and subjected to internal air pressure of 70kPa‖ for five minutes shall show no signs of leakage or any other damage during or after the test.

NOTE — Care shall be taken to avoid water entering the cans during the test.

---

*Method for Brinell hardness test for light metals and their alloys.

†Specification for brazing alloys (*first revision*).

‡Glossary of terms relating to welding and cutting of metals.

§Methods of testing fusion welded joints in aluminium and aluminium alloys.

‖100 kPa = 1·019 7 kgf/cm².

7.2 Drop Test — The cans filled to rated capacity (up to the neck) with water and with lid on shall be held in a vertical position and dropped once vertically from a height of 125 cm on a horizontal hard concrete floor or steel surface. The cans shall neither show any leakage nor suffer from any damage other than denting.

7.3 The cans when filled with water and inverted shall not show any profuse leakage through lids.

8. MARKING

8.1 The cans shall be marked legibly and permanently with the following particulars:

a) Manufacturer's name or initials or trade-mark, if any;
b) The rated capacity of the can in litres;
c) Point of capacity;
d) Batch or code number; and
e) Any other markings which may be required by the purchaser and agreed upon between the supplier and the purchaser.

8.1.1 The product may also be marked with Standard Mark.

8.1.2 The use of the Standard Mark is governed by the provisions of the Bureau of Indian Standards Act, 1986 and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of Standard Mark may be granted to manufactures or producers may be obtained from the Bureau of Indian Standards.

APPENDIX A

(*Clause* 6.1)

SAMPLING OF ALUMINIUM ALLOY MILK CANS

A-1. SCALE OF SAMPLING

A-1.1 Lot — In any consignment, all the cans of the same size, shape and from the same batch of manufacture shall be grouped together to form a lot.

A-1.2 Samples shall be tested separately for each lot for ascertaining the conformity of cans to the requirements of this specification.

A-1.3 The number of cans to be selected from the lot shall depend on the size of the lot and shall be in accordance with col 1 and 2 of Table 2.

TABLE 2 SCALE OF SAMPLING AND PERMISSIBLE NUMBER OF DEFECTIVES

NUMBER OF CANS IN THE LOT	FOR VISUAL, DIMENSIONAL REQUIREMENTS AND AIR PRESSURE TEST		FOR THICKNESS AND OTHER TESTS
	Number of Cans to be Selected	Permissible No. of Defective Cans	Number of Cans to be Selected
N	*n*		*n*
(1)	(2)	(3)	(4)
3 to 25	3	0	1
26 „ 100	5	0	1
101 „ 300	8	0	2
301 „ 500	13	1	2
501 „ 1 000	20	1	3
1 001 „ 3 000	32	2	3
3 001 and above	50	3	5

A-1.3.1 These cans shall be selected at random from the lot. To ensure the randomness of selection, a random number table (*see* IS : 4905-1968*) as agreed to between the purchaser and the supplier shall be used. In case such a table is not available, the following procedure shall be used:

> Starting from any can in the lot, count them as 1, 2, 3,......, up to *r* and so on in one order, where *r* is the integral part of *N*/*n*, *N* being the number of cans in the lot and *n* the number of cans to be selected (*see* Table 2). Every *r*th can thus counted shall be withdrawn to give the required number of cans in the sample.

A-2. NUMBER OF TESTS AND CRITERIA FOR CONFORMITY

A-2.1 All the cans selected according to col 2 of Table 2 shall be first examined for visual and dimensional requirements given in **4.1** and **5.2** to **5.9** and then tested for air pressure according to **7.1**.

A-2.1.1 A can failing to satisfy any of these requirements shall be considered as defective. The lot shall be considered to have satisfied these requirements if the number of defectives found in the sample is less than or equal to the corresponding permissible number of defective cans given in col 3 of Table 2.

---

*Methods for random sampling.

A-2.2 The lot having been found satisfactory according to **A-2.1** shall be tested for thickness (*see* **5.1**) and for tests given in **7.2** and **7.3**. For each of these tests, a subsample of cans shall be selected according to col 4 of Table 2. These cans shall be selected from those already tested according to **A-2.1** and found satisfactory.

A-2.2.1 The lot shall be declared as conforming to the requirements of the specification if none of the cans tested for the requirements given in **5.1**, **7.2** and **7.3** fails to meet the corresponding specification requirements; otherwise not.

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